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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
LOVEL, KIMBERLY M

ART UNIT	PAPER NUMBER
2167	

DATE MAILED: 02/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

Office Action Summary	Application No.	Applicant(s)
	10/626,856	BRANTS ET AL.
	Examiner	Art Unit	
	Kimberly Lovel	2167	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE _3_ MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _25 July 2003_.

2a)☐ This action is **FINAL.**   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) _1-37_ is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) _1-37_ is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on _02 April 2004_ is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All   b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _7/25/03 4/20/04_.

4)☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5)☐ Notice of Informal Patent Application (PTO-152)

6)☐ Other: _____.

DETAILED ACTION

Claim Status

1.   Claims 1-37 are pending.

2.   Claims 1-37 are rejected.

Claim Rejections - 35 USC § 101

3.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4.   Claims 1-15, 31, and 33-37 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Claim 1 is directed to "a method of detecting new events," which is nothing more than an abstract idea or algorithm, and has no physical or tangible embodiment. The claim fails to produce a concrete, tangible and useful result. Claims 2-15 inherit the deficiencies of claim 1, and fails to cure them.

Claim 31 is directed to "a carrier wave encoded to transmit a control program, useable to program a computer to detect new events, to a device for executing the program." According to Annex IV of the "Interim Guidelines for Examination of Patent Applications for Subject Matter Eligibility" that was signed on Oct 26 and posted at http://www.uspto.gov/web/offices/pac/dapp/ogsheet.html , a carrier wave is considered to be nonstatutory subject matter because it does not fall into any of the four statutory categories of invention.

Claim 33 is directed to a "method of combining inter-story similarity information," which is nothing more than an abstract idea or algorithm, and has no physical or tangible embodiment. The claim fails to produce a concrete, tangible and useful result. Claim 34 inherits the deficiencies of claim 33, and fails to cure them.

Claim 35 is directed to a "method of detecting new events," which is nothing more than an abstract idea or algorithm, and has no physical or tangible embodiment. The claim fails to produce a concrete, tangible and useful result. Claim 36 inherits the deficiencies of claim 35, and fails to cure them.

Claim 37 is directed to a "method of determining a predictive model for new event detection," which is nothing more than an abstract idea or algorithm, and has no physical or tangible embodiment. The claim fails to produce a concrete, tangible and useful result.

To expedite a complete examination of the instant application, the claims rejected under 35 U.S.C. 101 (nonstatutory) above are further rejected as set forth below in anticipation of applicant amending these claims to place them within the four statutory categories of invention.

Claim Rejections - 35 USC § 102

5.   The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

6.   Claims 33-34 and 35-36 are rejected under 35 U.S.C. 102(a) as being anticipated by the article "Relevance Models for Topic Detection and Tracking" by Lavrenko et al (hereafter Relevance Model).

Claim 33:

Referring to claim 33, Relevance Model discloses a method of combining inter-story similarity information comprising the steps of:

determining $P(sameROI(q,d))$ based on the probability of story q and story d having the same ROI category (see section 3.2: Measuring Topic Similarity – according to paragraph [0013], lines 6-7 of the applicant's specification, the definition of an ROI category is a categorization of events; the topic is considered to represent an event);

determining $similarity_{IEF''}$, based on a similarity with no inverse event frequency influence (see section 3.2: Measuring Topic Similarity); and

the formula: $similarity'(q,d)=P(sameROI(q,d))* similarity_{IEF'}(q,d)+(1-P(sameROI(q,d)))* similarity_{IEF''}(q,d)$ (see section 3.2: Measuring Topic Similarity, lines 15-17 – the formula is an extended version of $D(M1||M2) + D(M2||M1)$).

Claim 34:

Referring to claim 34, Relevance Model teaches the method of claim 33, wherein $P(sameROI(q,d))$ is based on the formula:

$$P(sameROI(q,d)) = \frac{N_{same}(similarity_{IEF''}(q,d))}{N_{same}(similarity_{IEF''}(q,d)) + N_{different}((similarity_{IEF''}(q,d))}$$ (see

section 3.2: Measuring Topic Similarity, lines 31-44 – clarity represents Ndiff).

Claim 35:

Referring to claim 35, Relevance Model teaches a method of detecting

new events comprising the steps of:

determining a first source-identified story associated with at least one

event (see section 3.2: Measuring Topic Similarity – story S1);

determining a second source-identified associated with at least one event

(see section 3.2: Measuring Topic Similarity – story S2);

determining a story-pair based on the first source-identified story and the

second source-identified story (see section 3.2: Measuring Topic Similarity, lines

1-14 – S1 and S2);

determining inter-story similarity between the first and second story based

on at least one of:

an event frequency model, story segmentation (see section 1:

Introduction, lines 3-7) and a source-identified inter-story similarity metric.

Claim 36:

The method of claim 35, wherein story segmentation is based on at least

one of: topic (see section 1: Introduction, lines 3-7), an adjacent window and an

overlapping window.

Claim Rejections - 35 USC § 103

7.   This application currently names joint inventors. In considering

patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that

the subject matter of the various claims was commonly owned at the time any

inventions covered therein were made absent any evidence to the contrary.

Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor

and invention dates of each claim that was not commonly owned at the time a

later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35

U.S.C. 103(a).

8.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

9.   Claims 1-2, 7-17, 22-32 and 37 are rejected under 35 U.S.C. 103(a) as

being unpatentable over the article "Topic Detection and Tracking Pilot Study

Final Report" by Allan et al (hereafter Final Report) in view of the article

"Relevance Models for Topic Detection and Tracking" by Lavrenko et al.

Claim 1:

Final Report discloses a method of detecting new events. In particular,

Final Report discloses a method of detecting new events (see section 1.1:

Background, lines 1-6) comprising the steps of:

determining at least one story characteristic based on at least one of:

an average story similarity story characteristic (see section 3.3: The

UMass Aproach, lines 30-32 – the features of the document are

considered to represent the an average story similarity characteristic) and

a same event-same source story characteristic (see section 3.1: Detection

Evaluation: lines 34-44);

determining a source-identified story corpus, each story associated

with at least one event (see section 1.2: The Corpus; section 2.1:

Evaluation, lines 11-16 – in this case the source of the corpus is CNN or

Reuters);

determining a source-identified new story associated with at least

one event (see section 3: New Event Detection, lines 19-24);

determining story-pairs based on the source-identified new-story

and each story in the source-identified story corpus (see section 3.1:

Detection Evaluation, lines 6-48 – each new story is associated with a

cluster which is considered to represent a story-pair);

determining at least one inter-story similarity metric for the story-

pairs (see section 3.2: The CMU Approach, lines 34-35 – the cosine value

of the corresponding story vectors is the metric used to measure the

similarity between two stories);

determining at least one adjustment to the inter-story similarity

metrics based on at least one story characteristic; and

determining if the event associated with the new story is similar to the events associated with the source-identified story corpus based on the inter-story similarity metrics and the adjustments (see section 3.2: The CMU Approach, lines 95-120).

However, Final Report fails to explicitly teach the limitation of determining at least one adjustment to the inter-story similarity metrics based on at least one story characteristic. Relevance Model also discloses a method for detecting new events similar to that of Final Report including the further limitation. In particular, Relevance Model discloses determining at least one adjustment to the inter-story similarity metrics based on at least one story characteristic (see section 4.3: Relevance Model Performance – the KL metric is adjusted by a clarity value).

It would have been obvious to one of ordinary skill at the time the invention was made to utilize Relevance Model's method of determining at least one adjustment to the inter-story similarity metrics based on at least one story characteristic with Final Report's method of detecting new events. One would have been motivated to do so since Final Report smoothes each model created from the Kullback-Leibler metric and smoothing is a type of adjustment (Final Report: see section 2.2 Dragon Approach, lines 75-77).

Claim 16:

The system for detecting new events of claim 16 is rejected on the same grounds as the method for detecting new events of claim 1.

Claim 31:

The carrier wave of claim 31 is rejected on the same grounds as the method of claim 1.

Claim 32:

The computer readable storage medium of claim 32 is rejected on the same grounds as the method of claim 1.

Claim 2:

Referring to claim 2, the combination of Final Report and Relevance Model (hereafter FinalReport/RelevanceModel) teaches the method of claim 1, wherein the inter-story similarity metric is adjusted based on at least one of subtraction (Relevance Model: see section 4.3: Relevance Model Performance, lines 1-13 – the symmetric clarity-adjusted KL is the similarity metric utilized; and section 4.2: Value of Clarity-adjusted KL, line 12 – the equation uses subtraction) and division (Relevance Model: see section 3.2: Measuring Topic Similarity, lines 31-37 – clarity is considered to represent the adjustment).

Claim 17:

Claim 17, which is dependent on the system of claim 16 is rejected on the same grounds as claim 2, which is dependent on the method of claim 1.

Claim 7:

Referring to claim 7, FinalReport/RelevanceModel teaches the method of claim 1, wherein the inter-story similarity metrics are comprised of: at least one story frequency model (Final Report: see section 4.1: Detection Experiments, lines 13-15); and

at least one event frequency model combined using terms weights

(Relevance/Model: see section 5.1: Tracking algorithm, lines 1-23).

Claim 22:

Claim 22, which is dependent on the system of claim 16 is rejected on the

same grounds as the claim 7, which is dependent on the method of claim 1.

Claim 8:

Referring to claim 8, FinalReport/RelevanceModel teaches the method of

claim 1, wherein the inter-story similarity metrics are comprised of at least one

story frequency model (Final Report: see section 4.1: Detection Experiments,

lines 13-15); and

at least one story characteristic frequency model combined using terms

weights (Relevance Model: see Figure 6).

Claim 23:

Claim 23, which is dependent on the system of claim 17 is rejected on the

same grounds as the claim 8, which is dependent on the method of claim 1.

Claim 9:

Referring to claim 9, FinalReport/RelevanceModel teaches the method of

claim 8, where the adjustments based on the story characteristics are applied to

the term weights (Relevance Model: see section 1: Introduction, lines 29-31 and

Figure 6).

Claim 24:

Claim 24, which is dependent on the system of claim 23 is rejected on the

same grounds as the claim 9, which is dependent on the method of claim 8.

Claim 10:

Referring to claim 10, FinalReport/RelevanceModel teaches the method of claim 8, where the adjustments based on the story characteristics are applied to the inter-story similarity metrics (Relevance Model: see section 4.3: Relevance Model Performance – the KL metric is adjusted by a clarity value).

Claim 25:

Claim 25, which is dependent on the system of claim 23 is rejected on the same grounds as the claim 10, which is dependent on the method of claim 8.

Claim 11:

Referring to claim 11, FinalReport/RelevanceModel teaches the method of claim 1, wherein the inter-story similarity metrics are comprised of at least one term frequency-inverse event frequency model (Final Report: see section 4.1: Event Detection, lines 11-23) and where the events are classified based on at least one of: story labels and a predictive model (Relevance Model: see section 5.1: Tracking Algorithm, lines 11-23).

Claim 26:

Claim 26, which is dependent on the system of claim 16 is rejected on the same grounds as the claim 11, which is dependent on the method of claim 1.

Claim 12:

Referring to claim 12, FinalReport/RelevanceModel teaches the method of claim 8, wherein an event frequency is determined based on term t and ROI category $rmax$ from the formula: $ef_{r_{max}}(t) = \max_{r \in R}(ef(r,t))$ (Final Report: see section 3.2: Measuring Topic Similarity – the equation finds the probability of the topic).

Claim 27:

Claim 27, which is dependent on the system of claim 23 is rejected on the same grounds as the claim 12, which is dependent on the method of claim 8.

Claim 13:

Referring to claim 13, FinalReport/RelevanceModel teaches the method of claim 8, wherein an the inverse event frequency is determined based on term t, and events e and $rmax$ in the set of ROI categories from the formula:

$$IEF(t) = \log\left[\frac{N_{e,r}}{ef(r,t)}\right]$$ (Final Report: see section 3.5 Results, Analysis, and Future

Work – finding the inverse document frequency is comparable to finding the inverse event frequency).

Claim 28:

Claim 28, which is dependent on the system of claim 23 is rejected on the same grounds as the claim 13, which is dependent on the method of claim 8.

Claim 14:

Referring to claim 13, FinalReport/RelevanceModel teaches the method of claim 8, wherein an inverse event frequency is determined based on term t, categories e, r and rmax in the set of ROI categories and P(r), the probability of

ROI r from the formula: $IEF'(t) = \sum_{r\in R} P(r)\log\left[\frac{N_{e,r}}{ef(r,t)}\right]$ (Final Report: see section

3.5 Results, Analysis, and Future Work – finding the inverse document frequency is comparable to finding the inverse event frequency; the derivative of the first equation has been taken).

Claim 29:

Claim 29, which is dependent on the system of claim 23 is rejected on the same grounds as the claim 14, which is dependent on the method of claim 8.

Claim 15:

Referring to claim 15, FinalReport/RelevanceModel teaches the method of claim 1 further comprising the step of determining a subset of stories from the source-identified story corpus and the source-identified new story based on at least one story characteristic (Final Report: see section 3.1: Detection Evaluation – the stories within the corpus are placed in clusters which is considered to represent a subset).

Claim 30:

Claim 30, which is dependent on the system of claim 16 is rejected on the same grounds as the claim 15, which is dependent on the method of claim 1.

Claim 37:

Final Report discloses a method of determining a predictive model for new event detection. In particular, Final Report discloses a method of determining a predictive model for new event detection comprising the steps of:

determining a current story and corpus of stories each associated with at least one event (see section 3: New Event Detection, lines 19-24; section 1.2: The Corpus; section 2.1: Evaluation, lines 11-16 – in this case the source of the corpus is CNN and Reuters);

determining cost information;

determining a multi-story similarity metric based on the current story and a

plurality of at least two corpus stories (see section 3.1: Detection Evaluation,

lines 6-48 – each new story is associated with a cluster which is considered to

represent a story-pair; section 3.2: The CMU Approach, lines 34-35 – the cosine

value of the corresponding story vectors is the metric used to measure the

similarity between two stories);

determining new event decision model information (see section 3.1:

Detection Evaluation, lines 15-33);

determining new event information for the current story based on the new

event decision model information and the multi-story similarity metric (see section

3.1: Detection Evaluation);

determining event training information (see section 1.3: The Tasks, On-

line New Event Detection);

determining new event decision model information based on the event

training information, the cost information and a learner (see section 3.4: Dragon

Approach).

Final Report fails to explicitly teach the further limitation of determining

cost information. Relevance Model teaches a method similar to that of Final

Report including determining cost information. In particular, Relevance Model

teaches determining cost information (see section 4.1.3: Evaluation Paradigm).

It would have been obvious to one of ordinary skill in the art at the time the

invention was made to utilize Relevance Model's method of determining cost

information with Final Report's predictive model. One would have been

motivated to do so since cost information discusses how pairs were incorrectly

detected and also since Final Report and Relevance Model are based on the

same study (Final Report: see abstract; Relevance Model: see abstract).

10.   Claims 3-5 and 18-20 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the article "Topic Detection and Tracking Pilot Study Final

Report" by Allan et al in view of the article "Relevance Models for Topic Detection

and Tracking" by Lavrenko et al as applied respectively to claims 1 and 16

above, and further in view of US Patent No 6,584,220 issued to Lantrip et al

(hereafter Lantrip et al).

Claim 3:

FinalReport/RelevanceModel teaches a method for new event detection

as claimed in claim 1. FinalReport/RelevanceModel also teaches the further

limitation wherein the inter-story similarity metric is at least one of a probability

based inter-story similarity metric (see section 3.2: Measuring Topic Similarity,

lines 1-14). However, FinalReport/RelevanceModel does not explicitly teach the

further limitation wherein the inter-story similarity metric is also a Euclidean

based inter-story similarity metric. Lantrip et al teaches a method of similarity

metrics including a Euclidean based inter-story similarity metric (Lantrip et al: see

column 4, lines 46-48).

It would have been obvious to one of ordinary skill at the time the

invention was made to utilize Lantrip et al's method of a Euclidean based inter-

story metric with Final Report/RelevanceModel's method of a probability based

inter-story metric. One would have been motivated to do so since a Euclidean based inter-story metric aids in solving the problem of how to train and cluster a corpus (Final Report: see section 1.2).

Claim 18:

Claim 18, which is dependent on the system of claim 16 is rejected on the same grounds as claim 3, which is dependent on the method of claim 1.

Claim 4:

Referring to claim 4, the combination of (FinalReport/RelevanceModel and Lantrip et al (hereafter FinalReport/RelevanceModel/Lantrip) teaches the method of claim 3, wherein the probability based inter-story similarity metric is at least one of a Hellinger, a Tanimoto, a KL divergence (Relevance Models: see section 3.2: Measuring Topic Similarity, lines 1-14 – Kullback-Leibler divergence) and a clarity distance based metric.

Claim 19:

Claim 19, which is dependent on the system of claim 17 is rejected on the same grounds as claim 4, which is dependent on the method of claim 3.

Claim 5:

Referring to claim 5, FinalReport/RelevanceModel/Lantrip teaches the method of claim 3, wherein the Euclidean based similarity metric is a cosine-distance based metric (Lantrip et al: see column 4, lines 46-48).

Claim 20:

Claim 20, which is dependent on the system of claim 17 is rejected on the same grounds as the claim 5, which is dependent on the method of claim 3.

11.   Claims 6 and 21 are rejected under 35 U.S.C. 103(a) as being

unpatentable over the article "Topic Detection and Tracking Pilot Study Final

Report" by Allan et al in view of the article "Relevance Models for Topic Detection

and Tracking" by Lavrenko et al as applied respectively to claims 1 and 16

above, and further in view of the article "On-line New Event Detection and

Tracking" by Allan et al (hereafter New Event Detection).

Claim 6:

        FinalReport/RelevanceModel teaches a method of detecting new events.

However FinalReport/RelevanceModel fails to explicitly teach the further

limitation wherein the inter-story metrics are determined based on a term

frequency-inverse story frequency model. New Event Detection discloses a

method similar to that of FinalReport/RelevanceModel. New Event Detection

discloses a method similar to that of FinalReport/RelevanceModel including the

further limitation.

        In particular, New Event Detection discloses a method similar to that of

claim 1, wherein the inter-story similarity metrics are determined based on a term

frequency-inverse story frequency model (see section 4.1: Detection

Experiments, lines 13-15).

        It would have been obvious to one of ordinary skill at the time the

invention was made to utilize New Event Detection's method of a term frequency-

inverse story frequency with Final Report/RelevanceModel's method of an inter-

story similarity metrics. One would have been motivated to do so since all three

articles discuss the TDT initiative carried out by the Center for Intelligent

Information Retrieval (Final Report: see abstract; Relevance Model: see abstract;

New Event Detection: see abstract).

Claim 21:

Claim 21, which is dependent on the system of claim 16 is rejected on the

same grounds as the claim 6, which is dependent on the method of claim 1.

Conclusion

12.   Any inquiry concerning this communication or earlier communications from

the examiner should be directed to Kimberly Lovel whose telephone number is

(571) 272-2750. The examiner can normally be reached on M-F from 7:30 to

3:00.

If attempts to reach the examiner by telephone are unsuccessful, the

examiner's supervisor, Jean Homere, can be reached on (571) 272-3780. The

fax phone number for the organization where this application or proceeding is

assigned is 571-273-8300.

Information regarding the status of an application may be obtained from

the Patent Application Information Retrieval (PAIR) system. Status information

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direct.uspto.gov. Should you have questions on access to the Private PAIR
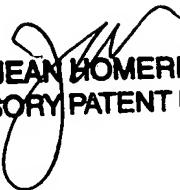
system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-

free).

Kimberly Lovel
Examiner
Art Unit 2167

kml
15 February 2006

JEAN HOMERE
SUPERVISORY PATENT EXAMINER